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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/828,745	04/21/2004	Michael L. Whitehead	4011	5487

63151 7590 08/26/2008

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EXAMINER	
ISSING, GREGORY C	
ART UNIT	PAPER NUMBER
3662	

MAIL DATE	DELIVERY MODE
08/26/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/828,745	WHITEHEAD ET AL.	
	Examiner	Art Unit	
	Gregory C. Issing	3662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 August 2008 and 20 June 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *38,41,43,45 and 46* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *38, 41, 43, 45, and 46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. The Declaration filed on 6/20/08 under 37 CFR 1.131 has been considered but is ineffective to overcome the Zimmerman (7,027,918) reference.

2. The evidence submitted is insufficient to establish a conception of the invention prior to the effective date of the Zimmerman reference. While conception is the mental part of the inventive act, it must be capable of proof, such as by demonstrative evidence or by a complete disclosure to another. Conception is more than a vague idea of how to solve a problem. The requisite means themselves and their interaction must also be comprehended. See *Mergenthaler v. Scudder*, 1897 C.D. 724, 81 O.G. 1417 (D.C. Cir. 1897). In the instant application, the claims recite the determination of a GNSS-defined position of a single point on a structure using the position of a master antenna, a known spatial relation of the master to said single point and an orientation of the structure, wherein the master station position is determined using signals received at both a master station antenna and a slave station antenna. This is not sufficiently described by the submitted evidence since the solutions described in the evidence relate to the position solution of the receiver and make no mention of a position of a remote point on a structure. Additionally, the statement that the ideas presented in the "Attachment" have been "kicking around the company for the last several years" fails to provide sufficient proof that applicants conceived and reduced to practice the claimed subject matter.

3. The Declarations filed on 4/28/08 under 37 CFR 1.131 have been considered but are ineffective to overcome the Zimmerman (7,027,918) reference.

4. The evidence submitted is insufficient to establish a conception of the invention prior to the effective date of the Zimmerman reference. While conception is the mental part of the inventive act, it must be capable of proof, such as by demonstrative evidence or by a complete

disclosure to another. Conception is more than a vague idea of how to solve a problem. The requisite means themselves and their interaction must also be comprehended. See *Mergenthaler v. Scudder*, 1897 C.D. 724, 81 O.G. 1417 (D.C. Cir. 1897). Applicants have not provided any evidence to support the showing that they invented the subject matter prior to April 7, 2003. The Attachment was missing in the Declaration filed 4/28/08.

5. The rejections under 35 USC 112, paragraphs 1 and 2 are overcome in view of the amendments/cancellations.

6. It is noted that Figure 3, added 6/11/2007, is acknowledged and approved for entry.

7. The Substitute Specification filed 8/6/08 is acknowledged and approved for entry.

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 38, 41, 43, 45 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dizchavez (6,191,733) in view of Zimmerman et al (7,027,918).

10. Dizchavez provides the following teachings. Based on current coordinates of two GPS antennae, a current orientation plane, and the known geometry of the work machine, the current position of its critical components can be determined. In the case described by Dichavez, the machine 10 corresponds to the claimed *structure*, GPS units 18 and 20 at known locations 1 and 2 correspond to the claimed *master and slave GNSS receivers having respective antennae*, and data processing system 24 corresponds to the claimed *computing means*. Additionally, Dichavez teaches an orientation means for determining the orientation of the body in the form of

processing plural sets of position measurements of points 1 and 2. The intent of Dizchavez is to accurately determine the *GNSS-defined position of a component point* on the structure, such as the location of the bucket 16. The position of the critical component is determined (2:36-40) in data processing unit 24 from a set of data including: (1) the three dimensional coordinates with respect to a chosen reference system (2:21-26) of each of the two GPS units; (2) a current orientation of the machine (2:31-33); and (3) the known geometry of the work machine, i.e. the spatial relation of the antennas to the critical component. It is noted that both GPS units synchronize to GPS time and are thus synchronized.

11. Dizchavex differ from claim 38 firstly since it is not specifically disclosed that the structure "at least partially blocks GNSS signals from the antennas"; however, Dizchavez does teach locating a first antenna 18 at a location 1 at a front corner of the body 12 and a second antenna 20 at a location 2 at a rearmost point. Since the embodiment described by Dizchavez is an excavator-type machine in mining, it is known that a cab conventionally exists between the front and rearmost portions of an excavator-type machine and thus provides a portion of the structure that is capable of blocking GNSS signals. Dizchavez differ from claim 38 secondly since the antenna 1 position is not specified as being determined using signals from both the first and second antennas. Dizchavez differ from claim 41 since the receivers are not disclosed as being incorporated within a single receiver unit. Dizchavez differ from claim 43 since the orientation device is not specified as a compass. Dizchavez differ from claim 45 since the structure is not specified as a marine structure.

12. Zimmerman et al teach the conventionality in the art of satellite navigation for use in excavator-type machines (Figures 6 and 7, e.g. show same field of endeavor) to incorporate first

and second GNSS receivers 202/204 in a single unit 200 wherein the two receivers share a common clock 208 such that satellite signals from the multiple antennas are fed to at least one receiver to determine a location. Zimmerman et al recognize the problem of large mounting structures on agricultural and construction vehicles (5:50-59). Zimmerman et al teach an advantageous solution to the problem by utilizing constraint information wherein the constraint information includes the use of a common clock, spatial data between antennas, and inertial measurement of attitude (7:58-8:52 and 13:42-16:61). The solution uses multiple antennas to obtain a position solution for each antenna where signals from fewer than four satellites are available at some antennas.

13. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Dizchavez by incorporating the teachings of Zimmerman et al wherein during times of self-occlusion, at least one of the receiver units 18/20 determines a position solution using GNSS signals received from both of the receiver units and constraint information and thereby enable a position solution even though a sufficient number of satellites are not visible to the at least one receiver unit. The modification allows the machine to continuously operate by determining the position coordinates of each receiver unit 18/20 even when a sufficient number of satellites are not visible due to occlusion resulting from the structure. Zimmerman et al also make obvious the use of an inertial measurement unit such as a compass to provide angular information. Lastly, Zimmerman et al teach the advantage of using the multiple antenna arrangement which allows the mounting of antennas in a low profile manner on construction equipment, where it is disadvantageous to have tall, cumbersome masts to elevate antennas (17:32-50). Zimmerman et al also teach that it is known in the art to

incorporate the plurality of receivers in a single housing; the combination with Dizchvez is obvious since the incorporation of a single housing in the same field of endeavor is known and the combination would yield a predictable result of a more compact and rugged unit. The use of a compass to provide heading/angular information is known in the art, see for example Zimmerman et al, and its use would have been obvious since it would yield a predictable result of providing its intended information, i.e. angular data without requiring operational power. The intended structure of a marine vessel would have been obvious to eh skilled artisan since there is nothing specific about the prior art combination that would limit its use to terrestrial only since determination of a remote position as well as the teachings of using multiple antennas to determine a position when one of the antennas fails to receive a sufficient number of satellite signals are operable independent of the vessel on which the process is performed.

14. Applicants argue that Zimmerman et al is not prior art submitting a declaration to support the argument by a showing of a dated document prior to the filing date of Zimmerman et al. The argument has been considered but is not persuasive, see response to the insufficiency of the declaration above. The combination of prior art teaches the determination of a GNSS defined position of a component point remote from the receivers using the position(s) of the antennas, orientation information, and spatial geometry (Dizchavez) and the determination of a position using signals from multiple antennas wherein a structure prevents a single antenna from receiving a sufficient number of satellite signals (Zimmerman et al).

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nichols (6,501,422) and Duddek et al (5,144,317) teach the determination of a GNSS-defined position remote from a GNSS antenna in a manner similar to Dizchavez.

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory C. Issing whose telephone number is (571)-272-6973. The examiner can normally be reached on Monday - Thursday 6:00 AM- 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Tarcza can be reached on (571)-272-6979. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Gregory C. Issing/
Primary Examiner
Art Unit 3662

gci